

# User's Manual

## Setup and Compilation

1.) Download and unzip Github file.

2.) The submission includes:

- main.cpp
- bruteForce.hpp
- bruteForce.cpp
- generation.hpp
- generation.cpp
- geneticAlgorithm.hpp
- geneticAlgorithm.cpp
- graph.hpp
- graph.cpp
- timer.hpp
- timer.cpp
- tour.hpp
- tour.cpp
- distances.txt
- UsersManual.docx (this file)
- UML-Diagram.docx
- Results-Table.xlsx

3.) Environment: This program has been tested in the multi-platform lab and will run there.

- 4.) Compiling. This program includes a *Makefile*. At the command line in Linux, type *make clean main*. The program produces an executable entitled *main*.

**Running the program:** Issue the command *./main* No command line arguments are required or checked.

**User input:** User is required to input an integer value between 1 to 20 for *number of cities per tour*, input an integer value between 3 to 120 for the *number of tours per generation*, input an integer value between 2 to 120 for the *number of generations*, and input a decimal value between 0.0 to 0.1 for *percent of mutation for each generation*. User must input in this specific order: *number of cities per tour, number of tours per generation, number of generations, then percent of mutation for each generation*.

**Output:** All output goes to the console. Output will be similar to this:

Number of Cities: 4

Optimal Cost of Brute Force: 307.78

Time the Bruce Force Algorithm Took: 2 milliseconds

Cost From the Genetic Algorithm: 307.78

Time the Genetic Algorithm Took: 2190 milliseconds

Percent of Optimal: 1